

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1, 3-7, 16-18, 30-35, 38-41, 43, 46-50, 66, 69, 71-74, 77, 78 and 83-86 are pending in the application, with claims 1, 66 and 78 being the independent claims. Claims 1, 66 and 78 have been amended to be directed to administration to mammals with cancer or metastasis thereof. Claim 1 was further amended to be directed to administration to non-injured muscle. Support for these amendments can be found throughout the specification, *inter alia*, at page 11, lines 1-9 and page 104, lines 9-22. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Interview

Applicants thank the Examiner for the courtesy extended in the telephone interview with the undersigned on February 7, 2006, and subsequent discussions with Applicants' representatives on April 7, April 14, and May 2, 2006. During the interviews, the pending art rejections were discussed.

Rejections under 35 U.S.C. § 112, first paragraph

Claims 1, 3-7, 16-18, 30-35, 38-41, 43, 46-50, 66, 69, 71-74, 77, 78 and 83-86 were rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with

the written description requirement. Not in acquiescence in the propriety of the rejection, but rather solely to advance prosecution, Applicants have amended claims 1, 66 and 78 to replace the phrase "mammal in need of cancer treatment" with "mammal with cancer or metastasis thereof." Applicants have further amended claim 1 to be directed to administration to non-injured muscle of a mammal. Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn. Furthermore, Applicants respectfully traverse the rejection as it may be applied to the amended claims presented herein.

To satisfy the written description requirement of 35 U.S.C. § 112, first paragraph, an Applicant must convey with reasonable clarity to those skilled in the art that, as of the effective filing date, the Applicant was in possession of the invention. *See Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1560, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991).

"However, the failure of the specification to specifically mention a limitation that later appears in the claims is not a fatal one when one skilled in the art would recognize upon reading the specification that the new language reflects what the specification shows has been invented." *All Dental Prodx, LLC v. Advantage Dental Products, Inc.* 309 F.3d 774, 779, 64 USPQ2d 1945 (Fed. Cir. 2002) (a copy is enclosed for the Examiner's convenience).

Even assuming, *arguendo*, that the specification does not explicitly support the claimed limitations, a rejection of the amended claims based on a failure to comply with the written description requirement would be incorrect. Claim 1 has been amended to recite that the plasmid is administered to the non-injured muscle of a mammal, and claims 1, 66 and 78 have been amended to be directed to administration to a mammal

with cancer or metastasis thereof. That invention is described in the specification, e.g., on page 11, lines 1-9. It is clear from the specification that the claimed invention is not directed to administration of a plasmid to injured muscle of mammals that do not have cancer or metastasis thereof. The claims as amended are analogous to the facts in *All Dental Prodx, Inc.* in which a claim amendment that was added, while not described verbatim, was still found to satisfy the written description requirement because it was capable of being understood in the context of the patent specification, and thus the meaning of the invention was reasonably clear. *Id.* Therefore, the failure of the specification to literally recite a given claim term would not be sufficient to support a rejection based on lack of written description. Accordingly, Applicants respectfully assert that the specification describes the claimed invention within the meaning of the written description requirement.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 1, 3-7, 16-18, 30-35, 38-41, 43, 46-50, 66, 69, 71-74, 77, 78 and 83-86 were rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Not in acquiescence in the propriety of the rejection, but rather solely to advance prosecution, Applicants have amended the claims to replace the phrase "mammal in need of cancer treatment" with "mammal with cancer or metastasis thereof." Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1, 3-7, 30-35, 38 and 43 were rejected under 35 U.S.C. § 102(a) as allegedly anticipated by Lawson. Applicants respectfully traverse the rejection as it may be applied to the amended claims. To anticipate, "the reference must teach every aspect of the claimed invention either explicitly or impliedly" see M.P.E.P. § 706.02. Lawson tested for serum levels of interferon α after plasmid administration in normal mice, bupivacaine-injured mice, or mice undergoing muscle regeneration caused by crush injury, but only detected serum levels of interferon α in the animals which underwent crush injury. No animals in Lawson had cancer or metastases thereof. In contrast, the pending claims require administration to the *non-injured* muscle of a mammal with cancer or metastases. Therefore, Lawson does not disclose every aspect of the claimed invention. Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 103

Claims 1, 3, 4, 7, 30, 31, 35, 38, 43 and 46-49 were rejected under 35 U.S.C. § 103 as allegedly obvious over Lawson in view of Zhang (*Proc. Natl. Acad. Sci. USA* 93:4513-4518 (1996)). Applicants respectfully traverse as it may be applied to the amended claims presented herein. To establish a *prima facie* case of obviousness: (1) the combined references must teach or suggest all the claim limitations; (2) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references; and (3) there must be a reasonable expectation of success. See M.P.E.P. § 706.02(j).

Lawson tested for serum levels of interferon α after plasmid administration in normal mice, bupivacaine-injured mice, or mice undergoing muscle regeneration caused by crush injury, but only detected serum levels of interferon α in the animals which underwent crush injury. No animals in Lawson had cancer or metastases thereof. In contrast, the pending claims require administration to the non-injured muscle of a mammal with cancer or metastases. The deficiencies of Lawson are not overcome by Zhang. Zhang discloses intratumoral injection of nude mice using an adenovirus vector encoding interferon α . Accordingly, Lawson, in view of Zhang, does not teach or suggest all of the claim limitations.

Even assuming, *arguendo*, that all elements were disclosed, one of ordinary skill in the art would not be motivated to combine the teachings of Lawson and Zhang, in fact Lawson teaches away from the combination. Since Lawson teaches that only crush-injured mice developed a systemic interferon α response, the two references teach that *crush-injury is required* for development of a systemic interferon α response in tumor-bearing mammals upon intramuscular injection. Applicants respectfully assert that one of ordinary skill in the art would not have been motivated to cause a *crush injury* in order to treat cancer. Therefore, there is no motivation to combine Lawson and Zhang because Lawson teaches that normal mice do not develop a systemic interferon α response following intramuscular injection. Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Claims 1, 3, 7, 35, 38 and 43 were rejected under 35 U.S.C. § 103 as allegedly obvious over Lawson in view of Ogura (*Cancer Res.* 50:5102-5106 (1990)). Applicants respectfully traverse as it may be applied to the amended claims presented herein.

Lawson tested for serum levels of interferon α after plasmid administration in normal mice, bupivacaine-injured mice, or mice undergoing muscle regeneration caused by crush injury, but only detected serum levels of interferon α in the animals which underwent crush injury. No animals in Lawson had cancer or metastases thereof. In contrast, the pending claims require administration to the non-injured muscle of a mammal with cancer or metastases. The deficiencies of Lawson are not overcome by Ogura. Ogura discloses fibroblast-mediated interferon α treatment of chronic myelogenous leukemia in which fibroblasts were virally infected. Accordingly, Lawson, in view of Ogura, does not teach or suggest all of the claim limitations.

Even assuming, *arguendo*, that all elements were disclosed, one of ordinary skill in the art would not have been motivated to combine the teachings of Lawson and Ogura, in fact Lawson teaches away from the combination. Since Lawson teaches that only crush-injured mice developed a systemic interferon α response, the two references teach that *crush-injury* is required for development of a systemic interferon α response upon intramuscular injection in mammals having chronic myelogenous leukemia. Applicants respectfully assert that one of ordinary skill in the art would not have been motivated to cause a *crush injury* in order to treat cancer. Therefore, there is no motivation to combine Lawson and Ogura because Lawson teaches that normal mice do not develop a systemic interferon α response following intramuscular injection. Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Claims 66, 69, 71-73, 78 and 83-85 were rejected under 35 U.S.C. § 103 as allegedly obvious over Aoki (*Human Gene Ther.* 8:1105-1113 (1997)) in view of

Lawson and Welander (*Investigational New Drugs* 5:S47-59). Applicants respectfully traverse as it may be applied to the amended claims presented herein.

Aoki discloses intraperitoneal injection of tumor-bearing mice using a plasmid encoding HSV-TK. Aoki does not disclose the use of a plasmid encoding interferon α . In contrast, the pending claims require administration of a plasmid encoding interferon α to a mammal with cancer or metastasis thereof. The deficiencies of Aoki are not overcome by the combination of Lawson and Welander. As described above, Lawson discloses that only crush-injured mice demonstrated any detectable level of serum interferon α following intramuscular injection. Welander also does not teach generation of serum interferon α in response to intramuscular injection using a plasmid encoding interferon α . Accordingly, Aoki, in view of Lawson and Welander, does not teach or suggest all of the claim limitations.

Even assuming, *arguendo*, that all elements were disclosed, one of ordinary skill in the art would not have been motivated to combine the teachings of Aoki, Lawson and Welander, in fact Lawson teaches away from the combination. Since Lawson teaches that only crush-injured mice developed a systemic interferon α response, the references teach that *crush-injury* is required for development of a systemic interferon α response upon intramuscular injection in mammals having tumors. Applicants respectfully assert that one of ordinary skill in the art would not have been motivated to cause a *crush injury* in order to treat cancer. Therefore, there is no motivation to combine Aoki, Lawson and Welander because Lawson teaches that normal mice do not develop a systemic interferon α response following intramuscular injection and no parallels can be drawn to

intraperitoneal delivery. Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Claims 1, 3-7, 30-35, 39-41, 43 and 46-49 were rejected under 35 U.S.C. § 103 as allegedly obvious over Okamoto (*Gene Therapy* 4:969-976 (1997)) in view of Lawson. Applicants respectfully traverse as it may be applied to the amended claims presented herein.

Okamoto discloses intramuscular injection of a plasmid into mice. Okamoto does not disclose intramuscular injection of a plasmid encoding interferon α . In contrast, the pending claims require administration to the non-injured muscle of a mammal with cancer or metastasis thereof. The deficiencies of Okamoto are not overcome by Lawson. As described above, Lawson discloses that only crush-injured mice demonstrated any detectable level of serum interferon α following intramuscular injection. Accordingly, Okamoto, in view of Lawson, does not teach or suggest all of the claim limitations.

Even assuming, *arguendo*, that all elements were disclosed, one of ordinary skill in the art would not have been motivated to combine the teachings of Okamoto and Lawson, in fact Lawson teaches away from the combination. Since Lawson teaches that only crush-injured mice developed a systemic interferon α response, the references teach that *crush injury* is required for development of a systemic interferon α response upon intramuscular injection in mammals. Applicants respectfully assert that it would not have been obvious to one of ordinary skill in the art to cause a *crush injury* in order to treat cancer. Therefore, there is no motivation to combine Okamoto and Lawson because Lawson teaches that normal mice do not develop a systemic interferon α response

following intramuscular injection. Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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